



U.S. DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
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PRELIMINARY RESULTS OF A SURVEY OF
WHOLESALE FISH DEALERS IN HAWAII

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PREFACE

The Fishery Management Research Task of the Southwest Fisheries Center Honolulu Laboratory initiated in 1980 a survey of the wholesale fish market in Hawaii. The survey consisted of a preliminary enumeration of total seafood volume followed by a monthly sampling of wholesale prices and quantities. The enumeration survey took place in mid-1980 and the monthly survey took place between October 1981 and May 1982. The survey was performed by SMS Research, Inc. (Contract No. 03-78-MO2-270).

This report presents preliminary results from the enumeration survey and is based on SMS Research's "Interim Status Report" which was submitted to the Laboratory in January 1982. The statements, findings, and conclusions herein are those of the contractor and do not necessarily reflect the official views of the National Marine Fisheries Service.

Data collected under this contract are held confidentially by the Southwest Fisheries Center Honolulu Laboratory, although researchers may use these data in an aggregated or otherwise desensitized format by contacting the Laboratory. The Southwest Fisheries Center Honolulu Laboratory intends to prepare an analytical report on the enumeration survey results later in 1982.

THE ENUMERATION SURVEY

Purpose of Survey

During development of the proposed survey of monthly prices and quantities of wholesale fish products in Hawaii, the need for an extensive preliminary survey was identified. This preliminary survey was initiated to serve as the basis for stratifying the firms involved and also to provide a general picture of the wholesale fish market industry in Hawaii.

Specific objectives of this enumeration survey included:

1. To define the actual population of firms which deal at the wholesale level of the fish marketing system in Hawaii. [The resulting list can be updated as changes occur within the industry, thus ensuring that any subsequent data collection activities will be based on the most accurate list available];
2. To provide information on the nature of the firms involved in this industry for a better understanding of the market;
3. To provide data on price and quantity estimates to allocate sample elements to sample strata for the primary monthly survey of wholesale fish products;
4. To provide data on classification variables other than price and quantity which could be used in constructing an optimum stratification system for the main data collection effort;
5. To provide a check on fielding and interviewing processes to improve fielding methods prior to the monthly surveys.

Sample

The universe of this study consisted of all firms that wholesale fish or fish products in the State of Hawaii. An initial list of firms was developed using the telephone directories of each county in the state, and it included firms ranging from small "mom and pop" operations to huge corporate ventures. The list was reviewed by the Southwest Fisheries Center Honolulu Laboratory and later updated by SMS Research staff to include new operations.

Survey Instrument

The survey instrument (appendix to this report) for the enumeration survey consisted of four major components: general firm data, revenue by type of fish products sold, source and distribution by type of fish products sold, and sales and purchase data.

General Firm Data

This section provided information about each fish dealer's business operations. Information was obtained on the type and size of each company, the number of years in business, and the principal functions of each, i.e., wholesaler, retailer, processor, or storage.

Analysis of Revenue by Type of Fish Products Sold

Five major fish products involved in this study are: 1) fresh fish; 2) frozen fish; 3) canned and bottled fish; 4) salted, dried, and smoked fish; and 5) fish cake. This section sought the percentage of total wholesale revenue accounted for by each of the product types.

Wholesalers were also asked to identify the percentage of total wholesale sales attributable to each species of fish. To make the enumeration survey manageable, the survey focused on 12 groups of fish species selected on the basis of catches reported to Hawaii Division of Aquatic Resources (HDAR) or the known importance in the marketplace.

Analysis of Source and Distribution by Type of Fish Product Sold

Each fish wholesaler was asked for source and distribution information for each type of product sold.

Source information.--Each wholesaler was asked to determine what percent of his total purchases was purchased locally, and of these local purchases, what percent was purchased directly from local fishers, from the auctions, and from other wholesalers.

The wholesaler was also asked to determine what percent of his total purchases was imported, either as mainland imports or foreign imports.

Distribution information.--Wholesale fish products in Hawaii are distributed in four ways: 1) to local retailers; 2) other wholesalers; 3) local processors; and 4) export. In this section, wholesalers were asked to determine the percentage of their wholesale sales going to each of the four distribution channels.

Sales and Purchase Data

All wholesalers were requested to provide information on total purchases (estimated) and total sales in last year's wholesale fish business. This information was recorded in pounds and dollar values for all fish and fish products, for fresh and frozen fish separately.

Data Collection

Pretest

Before conducting the actual enumeration, the survey instrument was pretested on several small fish dealers. The pretest was used to check the clarity of each question and to ensure the smooth administration of the interview in the field. No problems were noted during the pretest.

The fielding process.--The enumeration was conducted from July 14 to September 25, 1980. During that time, repeated interview attempts resulted in contact with 163 of the 185 sample firms; 44 of these were found to be ineligible, and interviews were completed with 106 of the remaining 119 firms (see Table 1). Interviews were conducted in several ways. Most frequently, an SMS interviewer would contact the owner or manager of the firm to make an appointment to conduct the interview. These interviews were usually held at the place of business during working hours. On several occasions, an interview was conducted while the respondent was actually cleaning fish.

In other instances when in-person interviews were not feasible, fish dealers were interviewed over the telephone.

After all of the interviews were completed, the data from the questionnaires were edited, coded, keypunched, and transferred to magnetic tape. The data on the tape were used for the construction of tables and were the basis for analysis. Tables 1 and 2 summarize the results of the field interviews.

Results

The enumeration sample consisted of the 106 firms which were identified as dealing to some degree at the wholesale level of the fish marketing system in Hawaii, and were willing to provide data for analysis. However, they do not represent the entire wholesale industry since 13 wholesale firms could not be contacted or did not want to participate in the enumeration survey.

Firm Structure

Most firms were organized as corporations (Table 3). This indicated some advantage of corporate structure over partnerships or proprietorships, such as limited tax liability or limited personal liability of owners.

Age of Firms

The industry appears to have a spread in ages of firms (Table 4). Most firms were recently established (less than 20 years in operation), but some have operated for over 60 years.

Type and Quantity of Employees

This industry is dominated by small firms (less than 50 full-time paid employees, Table 5). Firms with 76 to 200 employees were completely lacking. This study identified 2 large firms with more than 200 employees. A few firms had up to five non-paid full-time employees. These workers may represent family members in smaller operations.

Many firms used part-time, paid employees. Since 56% of firms used this type of employee, many smaller firms must be employing part-time help.

Function of Firms

The survey was limited to wholesale firms buying or selling at least some seafood. A surprising number (63 firms), however, also did some retailing (Table 6). Most wholesale firms did not participate in storage or processing activities.

The percentage of business at the wholesale level was relatively evenly distributed among firms (Table 7). Only 38 of 106 firms claimed all their business from wholesale activities.

Sources of wholesale revenue provided a different picture. Of 63 firms which had some dealings with fresh fish, 46% (29 firms) indicated that all wholesale revenues were from fresh fish. Few firms which dealt in fresh fish (12 firms) had less than 66% of wholesale business from fresh fish. This indicates that if a firm dealt with fresh fish, it was likely to derive a substantial (more than 67%) part of its wholesale revenues from it.

Frozen fish is a slightly different story. One third of the 63 firms which dealt with frozen fish dealt exclusively with that product. One hundred percent of their wholesale revenues came from frozen fish.

Only 17 firms dealt with canned and bottled fish to any degree. Of these firms, only one firm dealt with this product exclusively. A similar situation existed for salted, dried, or smoked fish. Only 26 firms dealt with these products to any degree, and only 3 firms dealt totally with these products. Only 13 firms dealt at all with fish cake. Three of these firms dealt solely with this product.

Quantity of Fish

Most firms (77%) purchased and sold between 10,000 and 999,999 pounds of fresh or frozen fish per year (Table 8). There were only 14 firms which handled over a million pounds.

Dollar Value of Fish

The situation for dollar amounts of the purchases and sales is similar to that for volume (Table 9). Most firms (65%) were in the \$10,000 to \$999,999 range. There were 14 purchasers and 16 sellers which handled over a million dollars in the year.

Species Groupings

Most groups of species comprise a variable portion of total wholesale business, for firms handling tuna, akule (bigeye scad), reef fish, crustaceans, mollusks, mahimahi (dolphin fish), and bottom fish (Table 10). Some groups of fish only provide a small percentage of wholesale revenues for any firm. Billfish, shark, and ono (wahoo) are fish that fall into this classification. The number of firms which handled these species ranged from 4 for shark to 48 for tuna. Only 16 firms out of 106 dealt with billfish, and billfish accounted for less than 34% of wholesale business for any of these firms.

Fresh Fish

If a firm dealt mostly with fresh fish (i.e., more than 67% of its wholesale revenue), then it was highly likely that the fish came from local sources (Table 11). In fact, 35 of 63 firms which dealt solely in fresh fish obtained them all from local sources. However, if fresh fish comprised less than 67% of wholesale sales, the firm could have obtained the fish from either local or import sources.

Further differentiation of sources of fresh fish revealed that the auctions were not the dominant source of fresh fish (Table 12). Only 27 of 57 firms purchasing locally used the auctions at all. Only six of these firms used the auctions for all of their fresh fish requirements. Local fishers were a substantial source of fresh fish. There were 41 firms which bought fresh fish directly from local fishers. Twenty one of these firms used them as the sole local source. Only 20 of 57 firms used other wholesalers as sources of fresh fish.

Only 27 firms imported fresh fish. Of these firms, 11 imported 100% of their purchases from the mainland. Also 6 of these firms imported 100% of fresh fish purchases from foreign sources. The rest used import sources to varying degrees.

Fresh fish was sold primarily to retail markets (Table 13). Of 63 firms, 41 obtained 67 to 100% of their wholesale revenue from sales to retailers. Five of these 63 firms did not sell to retailers. Sales to other wholesale firms appeared quite common. Thirty-eight of sixty-three firms sold to other wholesale firms. Five dealers sold solely to other wholesalers.

Processing of fresh fish is limited. Only 6 of 63 firms were engaged in processing. Exporting was also limited. Thirteen of sixty-three firms exported fresh fish. Most (11 of 13 firms) derived only 1 to 33% of their wholesale revenues from export.

Frozen Fish

If a firm dealt with frozen fish as a substantial part (more than 66%) of its wholesale revenue, it was highly likely that the fish came from import sources (Table 14). There were 48 of the 63 firms which dealt in frozen fish which had all of their wholesale revenue from import sources. Only 15 of 63 firms which dealt with frozen fish used local sources. If frozen fish comprised only a small percentage of wholesale revenues, the source could have been either local or import.

Further differentiation of sources of frozen fish revealed that for local sources, other wholesalers were the most important source (Table 15). Eleven of fifteen firms used other wholesalers exclusively as a source for frozen fish. The auctions were occasionally used, but local fishers were never used as a source for frozen fish. Import sources of frozen fish were split between mainland and foreign sources.

The destination of frozen fish was similar to that for fresh fish (Table 16). Thirty-two of sixty-three firms had all their wholesale revenue from sales to retailers. Six firms did not sell to retailers. Sales to other wholesalers were not uncommon (28 firms). Of these firms, six had all of their wholesale revenue derived from sales to other wholesalers. Only three firms sold to processors, and only two firms sold to export destinations. This indicates that most frozen fish, whether local or imported, is used in local consumption.

Canned and Bottled Fish

Only 15 firms had more than 5% of wholesale revenue from canned and bottled fish (Table 17). Most of these products were imported. Of 15 firms, 13 had 100% of wholesale revenue from canned and bottled fish. Two of these firms obtained their product solely from local sources; whereas 11 obtained their product solely from import sources.

Of the four firms which obtained canned and bottled fish from local sources (Table 18), one firm obtained all of its fish from local fishers. The other three obtained their fish from local wholesalers.

Thirteen of fifteen firms obtained their canned and bottled fish from import sources. Seven firms used foreign sources exclusively; whereas only two used mainland sources exclusively.

The destination of most of this product was the retail sector (Table 19). There were 7 firms that had 100% wholesale revenues from retail sales of canned and bottled fish. Only 1 of 15 firms did not participate in sales to retailers.

Seven firms sold this product to other wholesalers. One firm obtained all its wholesale revenue from sales to other wholesalers. No firm sold to processors, and only one firm exported canned and bottled fish.

Salted, Dried, and Smoked Fish

There were 22 firms that had more than 5% wholesale revenue from salted, dried, and smoked fish (Table 20). Most firms imported these products (17 of 22). Thirteen firms derived all of their revenues from imported salted, dried, and smoked fish. Six firms derived all of their revenues from local sources of this product.

Ten firms obtained this product from local sources which included local fishers, the auctions, and other wholesalers (Table 21). Of the 17 firms which did import, 11 firms bought from the mainland and 9 used foreign sources.

Salted, dried, and smoked fish were sold primarily to retail buyers (Table 22). Eleven firms obtained all their wholesale revenue from sales to retailers. Twelve of twenty-two firms sold to other wholesalers. No sales were made to processors or exporters.

Fish cake

Only six firms had more than 5% of wholesale revenue from fish cake (Table 23). Most fish cake (or its raw material) came from import sources. All six firms imported some fish cake, but only four firms used local sources of fish cake. All three local sources were used by these wholesalers (Table 24). Import sources were divided between mainland and foreign sources. Two firms obtained all their fish cake from the mainland; whereas one firm obtained all its fish cake from foreign sources.

Fish cake was sold primarily to the retail market (Table 25). All six firms sold to retailers, two firms sold to other wholesalers, and only one firm exported. No firms sold fish cake to processors.

Discussion

The enumeration survey showed that the wholesale fish marketing firms in Hawaii are not merely wholesalers of fish. There is some vertical integration of this marketing system since 60% of these firms are also retailers. There appears to be some specialization of firms in terms of products handled. Many firms handled either all fresh or all frozen products. However, this specialization is not apparent with regard to fish species. Few firms dealt solely with only one species or species group.

Most firms obtained their fresh fish from local sources, primarily local fishers. Most sold to retailers and some sold to wholesalers, processors, and the export market. Frozen fish, on the other hand, was primarily imported (from either the mainland or foreign countries). Sales were primarily to retailers.

The number of firms which dealt to any degree with canned and bottled fish, salted, dried, and smoked fish as well as fish cakes was small. These products are evidently of minor importance in the overall wholesale fish market.

Correlation Analysis

The primary purpose for the enumeration study was to identify key variables which could be used in stratification of the wholesale firms for sampling. To aid in this process, a correlation matrix was calculated for about half of the variables in the enumeration survey. The selection criteria for variables to be included were: 1) that the variable has a distribution of responses, as opposed to only one or two responses and 2) that the variable has a response from most firms questioned. Twenty-eight variables were included in the correlation matrix. Results of the correlation matrix are given in Table 26. Only coefficients with values larger than 0.20 or less than -0.20 are listed. Blank spaces indicate correlation coefficients within the 0.20 to -0.20 range.

The matrix was used as a basis for stratification. The rationale for selecting variables used in stratification was that each be highly correlated to other key variables in the matrix. At the primary level, since this study relates to price and quantity values, the key variable should be highly correlated to variables that describe price and quantities. The only variable which was significant with a relatively high (greater than 0.50) correlation coefficient for fresh as well as frozen sales and purchases (in dollars and pounds) was total sales in dollars (variable 27). No other variable was so highly correlated with so many key variables. Total sales in dollars was therefore selected as the primary variable to serve as a base for stratification

A search was made for other key variables which were correlated with the different species groups, products, or forms. Percent of wholesale sales from tuna (variable 8) appeared to best fit the above criterion. However, its correlation with other variables was low. A consideration was whether or not further stratification by additional variables would be efficient and improve estimates of price and quantity values. Percent of wholesale sales from tuna had such low correlation coefficients with other variables that gains in efficiency did not appear to justify further stratification of the population in terms of this variable.

Table 1.--Disposition of all firms in the study.

	Oahu	Hawaii	Maui	Kauai	Total
Number of firms in sample	135	17	17	16	185
Firms unable to contact	16	0	2	4	22
Ineligible firms	31	2	6	5	44
Eligible firms	88	15	9	7	119
Completed interviews	76	14	9	7	106
Completion rate	86.4%	93.3%	100.0%	100.0%	89.1%

Table 2.--Distribution of completed interviews by county.

County	Number	Percentage
Oahu	76	71.7
Hawaii	14	13.2
Maui	9	8.5
Kauai	7	6.6
Total	106	100.0

Table 3.--Number of firms by firm structure.

Structure	Number of firms
Proprietorship	21
Partnership	8
Corporation	77
Total	106

Table 4.--Number of firms established by year.

Year	Number of firms
Before 1921	6
1921-1940	9
1941-1960	32
1961-1980	59
Total	106

Table 5.--Number of firms differentiated by type and number of employees.

Number of employees	Type of employees			
	Full-time		Part-time	
	Paid	Not paid	Paid	Not paid
0	5	93	47	104
1-5	50	11	53	2
6-25	37	2	4	0
26-75	12	0	1	0
76-200	0	0	0	0
More than 200	2	0	1	0
Total	106	106	106	106

Table 6.--Number of wholesale firms engaged in different activities.

Activity	Number of firms
Wholesale	106
Retail	63
Storage	15
Processing	27
Total	106

Table 7.--Number of firms differentiated by wholesale business and source of wholesale revenues.

Percentage of business	Wholesale business	Source of wholesale revenue				
		Fresh	Frozen	Canned bottled	Salted dried/smoked	Fish cake
1-33	20	5	28	6	18	9
34-66	13	7	8	6	4	1
67-99	35	22	6	4	1	0
100	38	29	21	1	3	3
Total	106	63	63	17	26	13

Table 8.--Number of firms differentiated by pounds of purchases and sales for specific products.

Pounds	Purchases			Sales		
	All fish	Fresh	Frozen	All fish	Fresh	Frozen
Less than 10,000	19	19	15	19	17	14
10,000 to 99,999	32	19	19	35	18	20
100,000 to 999,999	35	16	22	32	18	20
More than 100,000	13	4	3	14	4	3
Don't know	7	5	4	6	6	6
Total	106	63	63	106	63	63

Table 9.--Number of firms differentiated by dollar value of purchases and sales for specific products.

Dollars	Purchases			Sales		
	All fish	Fresh	Frozen	All fish	Fresh	Frozen
Less than \$10,000	16	16	15	13	12	12
\$10,000 to \$99,999	25	18	19	27	15	18
\$100,000 to \$999,999	41	16	22	44	21	20
More than \$1,000,000	14	6	3	16	8	8
Don't know	10	7	4	6	7	5
Total	106	63	63	106	63	63

Table 10.--Number of firms differentiated by percentage wholesale business from certain groups of species.

Percentage of business	Tuna	Akule	Reef fish	Crust- acean	Bill- fish	Opelu	Shark	Mollusk	Mahi- mahi	Ono	Bottom fish	Other
1-33	13	12	16	17	16	11	4	18	31	22	26	23
34-66	14	3	6	6	0	0	0	7	7	2	10	11
67-99	16	2	0	7	0	1	0	0	4	0	4	14
100	4	1	1	4	0	0	0	1	1	0	3	2
Don't know	1	0	0	0	0	0	0	0	0	0	0	0
Total	48	18	23	34	16	12	4	26	43	24	43	40

Table 11.--Number of firms dealing in fresh fish differentiated by source of wholesale revenue. (Base = 63 firms)

Percentage of wholesale revenue	Source	
	Local	Import
1-33	4	15
34-66	3	1
67-99	15	4
100	35	6
Don't know	0	1
Total	57	27

Table 12.--Number of firms dealing in fresh fish differentiated by percentage of purchases from specific sources. (Base = 63 firms)

Percentage of purchases	Local sources			Import sources	
	Fishers	Auctions	Wholesale	Mainland	Foreign
1-33	10	6	10	2	5
34-66	7	9	2	2	1
67-99	3	6	3	5	3
100	21	6	5	11	6
Don't know	0	0	0	1	1
Total	32	27	20	21	16

Table 13.--Number of firms dealing in fresh fish differentiated by percentage of wholesale sales to specific destinations. (Base = 63 firms)

Percentage of purchases	Destinations			
	Retail	Wholesale	Processing	Export
1-33	9	20	5	11
34-66	8	8	0	1
67-99	20	5	1	1
100	21	5	0	0
Don't know	21	5	0	0
Total	58	38	6	13

Table 14.--Number of firms dealing in frozen fish differentiated by source of wholesale revenue. (Base = 63 firms)

Percentage of wholesale revenue	Source	
	Local	Import
1-33	6	2
34-66	2	2
67-99	2	6
100	5	48
Total	15	58

Table 15.--Number of firms dealing in frozen fish differentiated by percentage of purchases from specific sources. (Base = 63 firms)

Percentage of purchases	Local sources			Import sources	
	Fishers	Auctions	Wholesale	Mainland	Foreign
1-33	0	1	0	10	8
34-66	0	9	0	10	10
67-99	0	0	1	8	10
100	0	3	11	18	12
Total	0	4	12	46	40

Table 16.--Number of firms dealing in frozen fish differentiated by percentage of wholesale sales to specific destinations. (Base = 63 firms)

Percentage of purchases	Destinations			
	Retail	Wholesale	Processing	Export
1-33	4	14	2	2
34-66	6	6	1	0
67-99	13	2	0	0
100	32	6	0	0
Don't know	2	0	0	0
Total	57	28	3	2

Table 17.--Number of firms having more than 5% of wholesale revenue from canned and bottled fish differentiated by source of wholesale revenue. (Base = 15 firms)

Percentage of wholesale revenue	Source	
	Local	Import
1-33	1	0
34-66	1	1
67-99	0	1
100	2	11
Total	4	13

Table 18.--Number of firms having more than 5% of wholesale revenue from canned and bottled fish differentiated by percentage of purchases from specific sources. (Base = 63 firms)

Percentage of purchases	Local sources			Import sources	
	Fishers	Auctions	Wholesale	Mainland	Foreign
1-33	0	0	0	2	0
34-66	0	0	0	2	2
67-99	0	0	0	0	2
100	1	0	3	2	7
Total	1	0	3	6	11

Table 19.--Number of firms having more than 5% of wholesale revenue from canned and bottled fish differentiated by percentage of wholesale sales to specific destinations. (Base = 63 firms)

Percentage of wholesales revenue	Destinations			
	Retail	Wholesale	Processing	Export
1-33	2	3	0	1
34-66	1	1	0	0
67-99	4	2	0	0
100	7	5	0	0
Total	14	7	0	1

Table 20.--Number of firms having more than 5% of wholesale revenue from salted, dried, and smoked fish differentiated by source of wholesale revenue. (Base = 22 firms)

Percentage of wholesale revenue	Source	
	Local	Import
1-33	3	1
34-66	0	0
67-99	1	3
100	6	13
Total	10	17

Table 21.--Number of firms having more than 5% of wholesale revenue from salted, dried, and smoked fish differentiated by percentage of purchases from specific sources. (Base = 22 firms)

Percentage of purchases	Local sources			Import sources	
	Fishers	Auctions	Wholesale	Mainland	Foreign
1-33	1	0	1	3	0
34-66	2	3	2	0	0
67-99	0	0	0	0	3
100	2	0	5	8	6
Total	5	3	8	11	9

Table 22.--Number of firms having more than 5% of wholesale revenue from salted, dried, and smoked fish differentiated by percentage of wholesale sales to specific destinations. (Base = 22 firms)

Percentage of purchases	Destinations			
	Retail	Wholesale	Processing	Export
1-33	0	4	0	0
34-66	7	7	0	0
67-99	4	0	0	0
100	11	1	0	0
Total	22	12	0	0

Table 23.--Number of firms having more than 5% of wholesale revenue from fish cake differentiated by source of wholesale revenue. (Base = 6 firms)

Percentage of wholesale revenue	Source	
	Local	Import
1-33	3	0
34-66	1	1
67-99	0	3
100	0	2
Total	4	6

Table 24.--Number of firms having more than 5% of wholesale revenue from fish cake differentiated by percentage of purchases from specific sources. (Base = 6 firms)

Percentage of purchases	Local sources			Import sources	
	Fishers	Auctions	Wholesale	Mainland	Foreign
1-33	0	0	0	2	0
34-66	0	1	1	1	1
67-99	0	0	0	0	2
100	2	1	0	2	1
Total	2	2	1	5	4

Table 25.--Number of firms having more than 5% of wholesale revenue from fish cake differentiated by percentage of wholesale sales to specific destinations. (Base = 6 firms)

Percentage of purchases	Destinations			
	Retail	Wholesale	Processing	Export
1-33	0	1	0	1
34-66	1	1	0	0
67-99	2	0	0	0
100	3	0	0	0
Total	6	2	0	1

Table 26.--Correlation coefficient matrix of key variables from the enumeration survey of wholesale fish dealers.

(Correlation coefficients listed for correlations outside -0.20 to 0.20 range.)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1						-21		21												85	78					85					
2					60	-34	36	-20	-23										25												
3									-19																						
4								-21				-29								-20	-20					-21		-21			
5		60				-43	31	-22	-21	-26	27				19	20		-20	21						20		26				22
6	-21	-34			-43		-68	36	24	30					-28	-40	32		-42			28	23	-22	-23			30	25	-21	-25
7		36			31	-68		-40		-19	28					54	-21		22					35	35					35	37
8	21	-20		-21	-22	36	-40				-33				-21	-27	21	-21	-32	22	23	31	26			22		33	26		
9		-23	-19		-21	24																									
10					-26	30	-19																								
11					27		28	-33										-21													
12				-29																											
13																															
14															27																
15					19	-28		-21						27																	
16					20	-40	54	-27																							28
17						32	-21	21																							
18					-20			-21			-21																				
19		25			21	-42	22	-32																							
20	85			-20				22													92					100	85				
21	78			-20				23												92		32	37	28	33	92	98	30	36	28	33
22					28		31														32		87	21			61	96	87	21	
23					23		26														37	87					69	84	99		
24					-22	35															28	21			85		64	21		100	85
25					20	-23	35														33				85		71			85	99
26	85			-21				22												100	92						84				
27					26															85	98	61	69	64	71	84		59	70	64	73
28				-21		30		33													30	96	84	21			59		86	21	
29					25			26													36	87	99				70	86			
30					-21	35															28	21		100	85		64	21			86
31					22	-25	37									28					33				85	99		73			86

- 1 Number of full-time employees.
- 2 Engage in retail sales?
- 3 Engage in storage?
- 4 Engage in processing?
- 5 Percent business wholesale.
- 6 Percent wholesale revenue from fresh fish sales.
- 7 Percent revenue from frozen fish sales.
- 8 Percent wholesale revenue from tuna sales.
- 9 Percent wholesale revenue from akule sales.
- 10 Percent wholesale revenue from reef fish sales.
- 11 Percent wholesale revenue from crustacean sales.
- 12 Percent wholesale revenue from billfish sales.
- 13 Percent wholesale revenue from opelu sales.
- 14 Percent wholesale revenue from shark sales.
- 15 Percent wholesale revenue from mollusks sales.
- 16 Percent wholesale revenue from mahimahi sales.

- 17 Percent wholesale revenue from ono sales.
- 18 Percent wholesale revenue from bottom fish sales.
- 19 Percent wholesale revenue from other fish sales.
- 20 Total purchases--pounds.
- 21 Total purchases--dollars.
- 22 Fresh purchases--pounds.
- 23 Fresh purchases--dollars.
- 24 Frozen purchases--pounds.
- 25 Frozen purchases--dollars.
- 26 Total sales--pounds.
- 27 Total sales--dollars.
- 28 Fresh sales--pounds.
- 29 Fresh sales--dollars.
- 30 Frozen sales--pounds.
- 31 Frozen sales--dollars.

APPENDIX

ENUMERATION SURVEY INSTRUMENT

NOAA FISH STUDY
PRELIMINARY ENUMERATION SURVEY

SMS Research
July, 1980

Interviewer: _____
Date: _____

Name of Firm: _____ I.D. # _____

Address: _____

Contact Person: _____ Title: _____

1. What is the structure of your firm? (CIRCLE ONE)

proprietorship	1
partnership	2
corporation	3
association	4
other _____	5
don't know/refused	9

2. How many employees do you have who are:

<u>Paid:</u>	full-time (over 30 hrs./week)	_____
	part-time	_____
<u>Non-paid:</u>	full-time	_____
	part-time	_____

3. What year did your firm start operating in Hawaii? _____

4a. What are the functions of your firm? (READ LIST AND CIRCLE ALL THAT APPLY.)

	<u>Yes</u>	<u>No</u>
wholesale sales	1	2
retail sales	1	2
storage	1	2
processing	1	2

4b. What percentage of your total business is wholesale? _____ %

If "wholesale sales" in #4a is marked "2," and if
#4b is marked "0%," THANK RESPONDENT AND TERMINATE

5. What percentage of last year's wholesale revenue came from:

fresh fish	_____ %
frozen fish	_____ %
canned and bottled fish	_____ %
salted, dried and smoked fish	_____ %
fishcake	_____ %
TOTAL	100 %

Now, I have a few questions about the SALTED, DRIED AND SMOKED FISH you handled in your wholesale business last year.

6. What percent of last year's wholesale revenue from salted, dried and smoked fish came from fish that was:

bought locally _____ %

7. What percent of your purchases (dollars) of this locally bought salted, dried and smoked fish came from:

local fishermen _____ %

the auction _____ %

wholesalers/brokers _____ %

100 %

8. What percent of last year's wholesale revenue from salted, dried and smoked fish came from fish that was:

imported _____ %

(Q.6 and Q.8 should equal 100%)

9. What percent of your purchases (dollars) of this imported salted, dried and smoked fish came from:

Mainland _____ %

foreign _____ %

100 %

10. What percent of your total wholesale sales of salted, dried and smoked fish was to:

local retailers _____ %

local wholesalers _____ %

local processors _____ %

export _____ %

100 %

Now, I have a few questions about the FISHCAKE you handled in your wholesale business last year.

11. What percent of last year's wholesale revenue from fishcake came from fish that was:

bought locally _____ %

12. What percent of your purchases (dollars) of this locally bought fishcake came from:

local fishermen _____ %

the auction _____ %

wholesalers/brokers _____ %

100 %

13. What percent of last year's wholesale revenue from fishcake came from fish that was:

imported _____ %

(Q.11 and Q.13 should equal 100%)

14. What percent of your purchases (dollars) of this imported fishcake came from:

Mainland _____ %

foreign _____ %

100 %

15. What percent of your total wholesale sales of fishcake was to:

local retailers _____ %

local wholesalers _____ %

local processors _____ %

export _____ %

100 %

15. What percentage of your total sales in your wholesale business was in each of the following species of fish? (REFER TO SPECIES LIST, IF NEEDED.)

Tuna	_____ %	Billfish	_____ %	Mahimahi	_____ %
Akule	_____ %	Opelu	_____ %	Ono	_____ %
Reef fish	_____ %	Shark	_____ %	Bottom fish	_____ %
Crustaceans	_____ %	Mollusks	_____ %	Other	_____ %
TOTAL 100%					

Finally, what was your:

17. Last year's total purchases (estimated) in your wholesale business of:

All fish and fish products	_____ lbs.
	\$ _____
Fresh fish	_____ lbs.
	\$ _____
Frozen fish	_____ lbs.
	\$ _____

18. Last year's total sales (estimated) in your wholesale business of:

All fish and fish products	_____ lbs.
	\$ _____
Fresh fish	_____ lbs.
	\$ _____
Frozen fish	_____ lbs.
	\$ _____

The National Marine Fisheries Service would like to thank you very much for helping with this research project.

NOAA ENUMERATION SURVEY ADDENDUM

Now, I have a few questions about the CANNED AND BOTTLED FISH you handled in your wholesale business last year.

1. What percent of last year's wholesale revenue from canned and bottled fish came from fish that was:

bought locally _____ %

2. What percent of your purchases (dollars) of this locally bought canned and bottled fish came from:

local fishermen _____ %

the auction _____ %

wholesalers/brokers _____ %

100 %

3. What percent of last year's wholesale revenue from canned and bottled fish came from fish that was:

imported _____ %

(Q.1 and Q.3 should equal 100%)

4. What percent of your purchases (dollars) of this imported canned and bottled fish came from:

Mainland _____ %

foreign _____ %

100 %

5. What percent of your total wholesale sales of canned and bottled fish was to:

local retailers _____ %

local wholesalers _____ %

local processors _____ %

export _____ %

100 %

Now, we would like to get an estimated breakdown of your wholesale business.

First of all, let's talk about the FRESH FISH you handled in your wholesale business last year.

6. What percent of last year's wholesale revenue from fresh fish came from fish that was:

bought locally _____ %

7. What percent of your purchases (dollars) of this locally bought fresh fish came from:

local fishermen _____ %

the auction _____ %

wholesalers/brokers _____ %

100 %

8. What percent of last year's wholesale revenue from fresh fish came from fish that was:

imported _____ %

(0.6 and 0.8 should equal 100%)

9. What percent of your purchases (dollars) of this imported fresh fish came from:

Mainland _____ %

foreign _____ %

100 %

10. What percent of your total wholesale sales of fresh fish was to:

local retailers _____ %

local wholesalers _____ %

local processors _____ %

export _____ %

100 %

Now, I have a few questions about the FROZEN FISH you handled in your wholesale business last year.

11. What percent of last year's wholesale revenue from frozen fish came from fish that was:

bought locally _____ %

12. What percent of your purchases (dollars) of this locally bought frozen fish came from:

local fishermen _____ %

the auction _____ %

wholesalers/brokers _____ %

100 %

13. What percent of last year's wholesale revenue from frozen fish came from fish that was:

imported _____ %

(0.11 and 0.13 should equal 100%)

14. What percent of your purchases (dollars) of this imported frozen fish came from:

Mainland _____ %

foreign _____ %

100 %

15. What percent of your total wholesale sales of frozen fish was to:

local retailers _____ %

local wholesalers _____ %

local processors _____ %

export _____ %

100 %

IF "CANNED AND BOTTLED FISH," "SALTED, DRIED, AND SMOKED FISH," OR "FISHCAKE" IS MORE THAN 5% IN Q.5, ASK ADDENDUM QUESTIONS.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
1						-21		21												85	78					85						
2					60	-34	36	-20	-23										25													
3									-19																							
4								-21				-29								-20	-20					-21		-21				
5		60				-43	31	-22	-21	-26	27				19	20		-20	21						20		26				22	
6	-21	-34			-43		-68	36	24	30					-28	-40	32		-42			28	23	-22	-23			30	25	-21	-25	
7		36			31	-68		-40		-19	28				54	-21		22						35	35					35	37	
8	21	-20		-21	-22	36	-40				-33				-21	-27	21	-21	-32	22	23	31	26			22		33	26			
9		-23	-19		-21	24																										
10					-26	30	-19																									
11					27		28	-33										-21														
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15					19	-28		-21						27																		
16					20	-40	54	-27																							28	
17						32	-21	21																								
18					-20			-21			-21																					
19		25			21	-42	22	-32																								
20	85			-20				22													92					100	85					
21	78			-20				23												92		32	37	28	33	92	98	30	36	28	33	
22						28		31													32		87	21			61	96	87	21		
23						23		26													37	87					69	84	99			
24						-22	35														28	21			85		64	21		100	85	
25					20	-23	35														33			85			71			85	99	
26	85			-21				22												100	92						84					
27					26															85	98	61	69	64	71	84		59	70	64	73	
28				-21		30		33													30	96	84	21			59		86	21		
29					25			26													36	87	99				70	86				
30						-21	35														28	21		100	85		64	21			86	
31					22	-25	37									28					33			85	99		73				86	

1 Number of full-time employees.

2 Engage in retail sales?

3 Engage in storage?

4 Engage in processing?

5 Percent business wholesale.

6 Percent wholesale revenue from fresh fish sales.

7 Percent revenue from frozen fish sales.

8 Percent wholesale revenue from tuna sales.

9 Percent wholesale revenue from akule sales.

10 Percent wholesale revenue from reef fish sales.

11 Percent wholesale revenue from crustacean sales.

12 Percent wholesale revenue from billfish sales.

13 Percent wholesale revenue from opelu sales.

14 Percent wholesale revenue from shark sales.

15 Percent wholesale revenue from mollusks sales.

16 Percent wholesale revenue from mahimahi sales.

17 Percent wholesale revenue from ono sales.

18 Percent wholesale revenue from bottom fish sales.

19 Percent wholesale revenue from other fish sales.

20 Total purchases--pounds.

21 Total purchases--dollars.

22 Fresh purchases--pounds.

23 Fresh purchases--dollars.

24 Frozen purchases--pounds.

25 Frozen purchases--dollars.

26 Total sales--pounds.

27 Total sales--dollars.

28 Fresh sales--pounds.

29 Fresh sales--dollars.

30 Frozen sales--pounds.

31 Frozen sales--dollars.